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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,473	09/26/2003	Edward L. Reuss	01-7095	8239
33681 7590 07/15/2009 PLANTRONICS, INC. IP Department/Legal 345 ENCINAL STREET P.O. BOX 635 SANTA CRUZ, CA 95060-0635				
EXAMINER				
JACKSON, JAKIEDA R				
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07/15/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/672,473

**Applicant(s)**

REUSS, EDWARD L.

**Examiner**

JAKIEDA R. JACKSON

**Art Unit**

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the Office Action mailed January 12, 2009, applicant submitted an amendment filed on April 6, 2009, in which the applicant traversed and requested reconsideration.

### ***Response to Arguments***

2. Applicant argues that the prior art cite neither alone or in combination teach generating a VAD threshold based at least in part on the sidetone attenuation. However, Machaelis teaches that a threshold is generated and the sidetone is measured based on this threshold, which implies that the threshold is generated based on the sidetone. There would be an exaggerated boost when the threshold is exceeded and exaggerated attenuation when the input falls below the threshold (paragraphs 0042-0043). Machaelis' system determines that a speech signal is present and varies the sidetone. That is, once the system decides that speech is present, but below a threshold, the sidetone is exaggerated and when above a threshold, lowering the sidetone. According to Applicant's own admission (page 9 of the remarks), Applicant's note that Michaelis determines speech and determines whether the speech is above or below a threshold. Although transparent to the user and a preprocessing step, in order for Michaelis to determine when to adjust the sidetone, a threshold is generated. Besides, paragraph 0048 teaches receiving a signal and characterizing components of the signal such that the appropriate adjustment can be made to the sidetone signal.

Art Unit: 2626

That is, a VAD is generated based on sidetone attenuation. Therefore, Applicant's arguments are not persuasive.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-2, 4-6 and 9-11, 13, 15-17, 20-22, 24 and 26-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand (USPN 6,850,617) in view of Feltstrom et al. (PGPUB 2002/0090078), hereinafter referenced as Feltstrom and in further view of Michaelis (PGPUB 2004/0174989)..

Regarding **claim 1**, Weigand discloses a voice activity detection method (VAD), comprising:

converting the average noise energy level to sidetone attenuation, the sidetone attenuation increasing with increased noise energy level (sidetone; column 1, line 32 – column 2, line 31); and

performing VAD based on the generated VAD threshold (threshold; column 1, line 32 – column 2, line 31), but does not specifically teach determining an average noise level and generating a VAD threshold.

Feltstrom discloses sidetone control within a telecommunication instrument comprising:

determining an average noise energy level of communications signals based on noise energy amplitude during periods of no voice activity (noise energy; column 3, paragraph 0029), to efficiently provide sidetone control.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weigand's method as described above, to control the sidetone which allows the user to talk in a normal manner, as taught by Feltstrom (column 1, paragraph 0002).

Weigand in view of Feltstrom discloses a voice activity detection method, but does not specifically teach generating a VAD threshold based at least in part on the sidetone attenuation.

Michaelis discloses a method of generating a VAD threshold based at least in part on the sidetone attenuation (paragraphs 0042-0043) to provide a variable sidetone signal.

Therefore, it would have been obvious to one of ordinary skill of the art at the time the invention was made to modify Weigand in view of Feltstrom's method as described above, to provide traditional, non-intrusive sidetone signal when the subscriber is speaking appropriately (paragraphs 0042-0043), as taught by Michaelis.

Regarding **claim 2**, Weigand discloses a method comprising:

detecting periods of no voice activity (absence of voice activity; column 1, line 32 – column 2, line 31);

determining a noise energy amplitude during the periods of no voice activity (absence of voice activity; column 1, line 32 – column 2, line 31); and

integrating the noise energy amplitude over an integration period to generate the average noise energy (average; column 4, lines 27-35).

Regarding **claims 4, 15 and 26**, Weigand discloses a method and apparatus wherein predetermined ambient noise to sidetone attenuation includes low and high ambient noise thresholds and minimum and maximum sidetone attenuation levels, the sidetone attenuation being set to the minimum sidetone attenuation level when the noise energy level is below the low ambient noise threshold and to the maximum sidetone attenuation level when the noise energy level is above the high ambient noise threshold (column 1, line 32 – column 2, line 61).

Regarding **claims 5, 16 and 27**, Weigand discloses a method and apparatus wherein the sidetone attenuation increases linearly between the minimum and maximum sidetone attenuation levels as the noise level increases from the low to the high ambient noise threshold (column 1, line 32 – column 2, line 6).

Regarding **claims 6, 17 and 29**, Weigand discloses a method and apparatus wherein the step of generating the VAD threshold includes utilizing at least one of an estimated, an actual, or an expected increase in voice level based on the sidetone attenuation (determine the level; column 1, line 32 – column 2, line 31).

Regarding **claims 9, 20 and 30**, Weigand discloses a method and apparatus wherein the VAD threshold is increased in proportion to the increase in voice level (threshold; column 1, line 32 – column 2, line 31).

Regarding **claims 10, 21 and 31**, Weigand discloses a method and apparatus wherein the VAD threshold is increased based on the sidetone attenuation (threshold; column 1, line 32 – column 2, line 31).

Regarding **claims 11, 22 and 32**, Weigand discloses a method and apparatus includes a VAD vector of thresholds each corresponding to an audio frequency sub-band (frequency; column 1, line 32 – column 2, line 31).

Regarding **claims 13, 24 and 28**, it is interpreted and rejected for similar reasons as set forth in claim 1. In addition, Weigand discloses a system, comprising:

a comparator configured to compare received signals to the adaptive VAD threshold to determine existence of voice activity (sidetone generator; column 1, line 32 – column 2, line 31).

5. **Claims 3, 7-8, 12, 14, 18-19, 23, 25 and 33-35** rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand in view of Feltstrom and in further view of Hollier et al. (USPN 6,389,111), hereinafter referenced as Hollier.

Regarding **claims 3, 14 and 25**, Weigand in view of Feltstrom disclose a method and apparatus comprising converting the average noise energy level (Weigand, average; column 4, lines 27-35) to sidetone attenuation according to a predetermined ambient noise (background noise; column 1, line 32 – column 2, line 31) and according to attack (attack; column 1, line 32 – column 2, line 31) and release time constants (time constants; column 4, lines 3-26), but does not specifically teach to sidetone attenuation transfer function.

Hollier teach a method and apparatus comprising a sidetone attenuation transfer function (transfer function; column 12, lines 21-30), to obtain an optimum level for the human ear to hear.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weigand in view of Feltstrom's method and apparatus wherein, as taught by Hollier, to avoid excessive acoustic noise being transmitted when there is no speech on the respective channel and to allow user to compensate for signal quality deficiencies (column 1, line 31 – column 2, line 18).

Regarding **claims 7, 18 and 33**, Weigand in view of Feltstrom disclose a method and apparatus for detecting voice activity, but does not specifically teach wherein the sidetone attenuation is defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold.

Hollier teach a method and apparatus wherein the sidetone attenuation is defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold (STMR; column 6, lines 46-60 and column 9, lines 44-53), in order to replace the acoustic feedback.



Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weigand in view of Feltstrom's method and apparatus wherein the sidetone attenuation is defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold., as taught by Hollier, to avoid excessive acoustic noise being transmitted when there is no speech on the respective channel and to allow user to compensate for signal quality deficiencies (column 1, line 31 – column 2, line 18).

Regarding **claims 8, 19 and 34**, Weigand in view of Feltstrom disclose a method and apparatus for detecting voice activity, but does not specifically teach wherein the maximum sidetone attenuation is approximately 12dB.

Hollier teach a method and apparatus wherein the maximum sidetone attenuation is approximately 12dB (12.43 dB; column 13, lines 20-28), to have a constant value over all iterations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weigand in view of Feltstrom's method and apparatus wherein the maximum sidetone attenuation is approximately 12dB, as taught by Hollier, to avoid excessive acoustic noise being transmitted when there is no speech on the respective channel and to allow user to compensate for signal quality deficiencies (column 1, line 31 – column 2, line 18).

Regarding **claims 12, 23 and 35**, Weigand in view of Feltstrom disclose a method and apparatus for detecting voice activity, but does not specifically teach a method and apparatus further comprising the step of reducing a gain on the communications signals in portion to the increase in voice level.

Hollier teach a method and apparatus comprising reducing a gain on the communications signals in portion to the increase in voice level (gain; column 4, lines 16-34 with column 10, lines 55-67), to obtain signal quality in the presence of noise.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weigand in view of Feltstrom's method and apparatus comprising reducing a gain on the communications signals in portion to the increase in voice level, as taught by Hollier, to avoid excessive acoustic noise being transmitted when there is no speech on the respective channel and to allow user to compensate for signal quality deficiencies (column 1, line 31 – column 2, line 18).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2626

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAKIEDA R. JACKSON whose telephone number is (571)272-7619. The examiner can normally be reached on Monday-Friday from 5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jakieda R Jackson/  
Examiner, Art Unit 2626  
July 8, 2009

/David R Hudspeth/  
Supervisory Patent Examiner, Art Unit 2626